

Low Impact Development Principles Project

Bellevue LID Principles Project East Bellevue Community Council (EBCC)

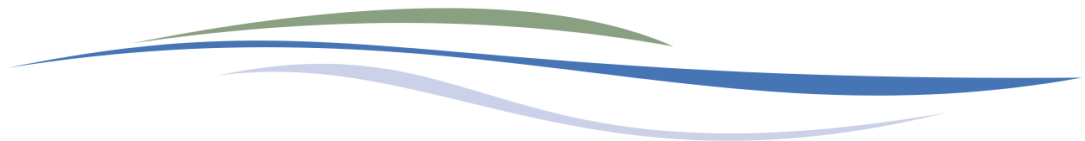
June 7, 2016



Low Impact Development
Principles Project

Presentation Overview

1. Why We Are Here
2. Opportunity Analysis
3. Council Direction
4. Briefings to Commissions and Boards
5. Public Engagement
6. Coordination with other Planning Initiatives
7. What is LID?
8. Amendment Proposals
9. Next Steps



1. Why We Are Here

- Share and solicit feedback from you the proposals to integrate low impact development (LID) principles into the City's existing codes and enforceable standards for new and redevelopment projects.
- This is a requirement under the City's NPDES Municipal Stormwater Permit.
- The City's codes are quite supportive to the use of LID principles, but there were opportunities that stakeholders, involved members of the public, and City staff identified.



1. Why We Are Here

Why this is important?

- Existing standards for tree retention and canopy enhancement, impervious surface coverage, and clustering for new and redevelopment projects are proposed to be amended.
- The amendments support the City's requirements under the NPDES Permit requirements as well as other City planning initiatives including:
 - City in a Park
 - Environmental Stewardship Initiative
 - Downtown Livability Initiative
 - Eastgate Corridor Study
 - Wilburton-Grand Connection Initiative

2. Council Direction

City Council Project Interest Statement:

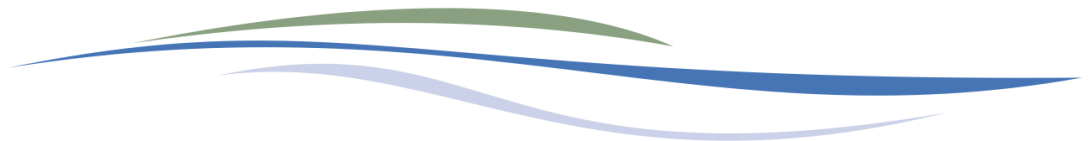
Bellevue supports the objective of maintaining the region's quality of life including that of making low impact development the preferred and commonly used approach to site development.



2. Council Direction

Council approved principles guide this project

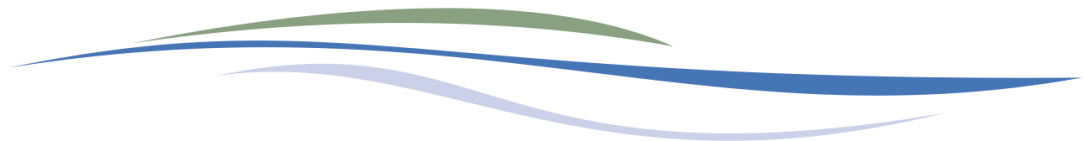
- Bellevue Appropriate
- Recognize and Seek to Balance Competing Needs
- Build On Existing Information and Programs
- Engage Stakeholders
- Maintain Bellevue's Compliance Record with its NDPES Stormwater Permit



3. Opportunity Analysis

Reviewed the following development-related codes, rules, standards, or other enforceable documents for **opportunities** to incorporate and require LID principles and LID BMPs.

Title 14 Transportation Code
Title 20 Land Use Plan
Title 22 Development Code
Title 23 Construction Code
Title 24 Utilities Code
Development Services Handouts
Fire Department Development Standards
Critical Areas Handbook
Clearing and Grading Development Standards
Inspection and Construction Guidelines
Transportation Design Standards
Utilities Surface Water Design Standards
Parks Environmental Best Management Practices



3. Opportunity Analysis

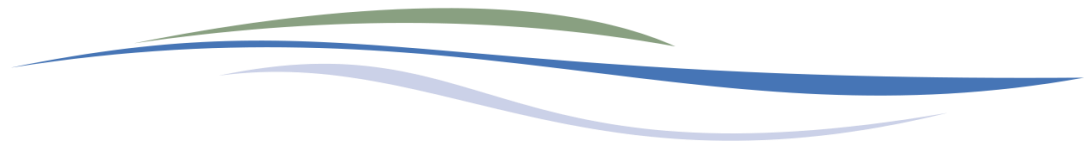
Identified “Areas of Focus” which guided our work on the recommendations

LAND USE CODE

- Evaluate use of LID early in the site design process
- Reduce impervious surface coverage
- Preserve and enhance tree canopy
- Improve options for clustering development

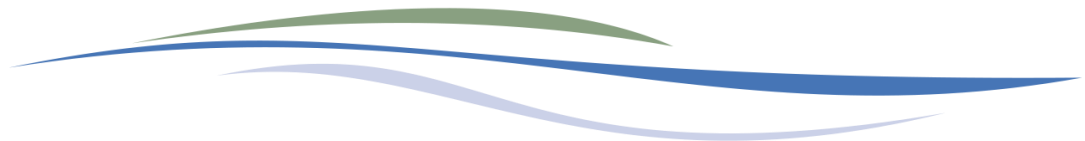
TRANSPORTATION DESIGN CODE AND STANDARDS

- Reduce impervious surfaces in rights-of-way
- Enhance tree canopy in transportation facilities



4. Briefings to Commissions & Boards

Commission/Board	Briefing Date
City Council	June 22, 2015
City Council	July 6, 2015
East Bellevue Community Council	September 1, 2015
Planning Commission	September 9, 2015
Transportation Commission	September 10, 2015
Parks and Community Services Board	October 13, 2015



5. Public Workshops

- City Hall (9/30/2015)
- Lewis Creek Visitors Center (10/6/2015)
- Cherry Crest Elementary School (10/15/2015)
- Master Builders (11/17/2015)
- City Hall (12/9/2015)

Area of Focus: Clustering

9/28/15 City Hall

What is clustering?

Clustering is a type of development where buildings are organized together into compact groupings that allow for portions of the development site to remain as open space. The primary purpose of clustering for low impact development is to minimize the development envelope, reduce impervious surface coverage, and maximize native soil and forest protection areas. In residential settings, clustering may lead to less vegetation loss, more affordable housing options, and more compact development than traditional single family development. In addition, the preservation of native soils and vegetated areas can provide useful areas for stormwater dispersion.



Potential Opportunities Include:

In favor

Against

1. Land Use Code: Improving clustering provisions to provide for flexibility in setbacks. This is possible through permitting designs for clustered development that would not meet current lot size, setback, and access standards.



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5. Public Comments

More than 100 comments received to date

"Preserving our natural soil conditions/quality (infiltrating capacity) is vital to minimizing stormwater runoff, and is difficult, if not impossible, "recapture" if destroyed with traditional construction approaches. For this reason, LID considerations (and site design) must be evaluated at project initiation."

- Bellevue resident

Low Impact Development Principles Project			Project Comments Received as of 2/1/2016		
Comment Number	Stakeholder Type	Comment	Area of Focus	Date Received	Format Received
1.1	Resident	Details: Site Design: we need education available to homeowners at the time of purchase. Work with realtors to educate them on an ongoing basis, provide brochures to realtors, create a metric and incentive to measure and keep ongoing process.	Site Design	10/1/2015	Website
1.2	Resident	Details: Impervious Surfaces: Allow an extra story of building height for single family residential building if A. No surrounding properties have view recorded on King Country property detail B. A vertical survey shows no substantial change in recorded views. Allow an extra of building height for if the residential footprint 25% less than the max footprint and A. A vertical survey shows 20% or less substantial change in recorded views B. A vertical survey shows extra story height matches the tree canopy average height of the property. Allow an extra story of building height for 25% of residential footprint if A. A vertical survey shows 10% or less substantial change in recorded views B. A vertical survey shows extra story height matches the tree canopy average height of the property. Zoning change by neighborhood and use.	Impervious Surfaces	10/1/2015	Website
1.3	Resident	Details: Impervious Surface: Change quantified residential streets to be one way streets. Extend right of way into street and plant trees on both sides of the street. Provide pervious: footpath on one side of the road.	Impervious Surfaces	10/1/2015	Website
1.4	Resident	Details: Wetlands have diminished in the building of Bellevue before protections were put in place. Purchase suitable land to create new wetlands for stormwater pollution control. http://www.researchgate.net/profile/Tony_Wong4/publication/250140687_A_stochastic_approach_to_designing_wetlands_for_stormwater_pollution_control/links/540db270c727b29a39f6c4.pdf	Project Principles	10/3/2015	Website
1.5	Resident	Purchase and restore wetlands so that they do their complete job in the stormwater system.	Project Principles	10/3/2015	Website
1.6	Resident	Create an innovative design for pedestrians that does not require curb/gutter + cement sidewalks in residential neighborhoods. Maybe: Smooth crusher fines trails (accessible) and planting section in higher traffic areas; trails along side streets with proteq surfacing in lower traffic areas http://www.pro-teqsurfacing.com/pathways-collection/	Site Design	10/3/2015	Website
1.7	Resident	Give away 5000 trees, tree watering bags, and tree dedication marker every year for 10 years to residents who pledge to care for the tree, water for 3 years, and make a dedication to a loved one for the tree. Start with low income, low canopy areas first.	Tree Retention and Canopy	10/3/2015	Website
1.8	Resident	Create a certification similar to Built Green for tree companies and landscapers that are trained in proper tree retention and always use proper permits.	Tree Retention and Canopy	10/3/2015	Website
1.9	Resident	Close the loophole in tree cutting.	Tree Retention and Canopy	10/3/2015	Website
1.10	Resident	Work with schools to create orchards.	Tree Retention and Canopy	10/3/2015	Website
1.11	Resident	Require tree permit number and project overview sign is clearly posted in right of way for 10 days as notice before tree removal	Tree Retention and Canopy	10/3/2015	Website
1.12	Resident	Offer free tree assessments for all trees every 5 years for single family	Tree Retention and Canopy	10/3/2015	Website
1.13	Resident	Create a health record for every City tree and learn what works best for our trees	Tree Retention and Canopy	10/3/2015	Website
1.14	Resident	Create a campaign to show how precious trees are and that people need to call in when trees are being down without notice and a permit.	Tree Retention and Canopy	10/3/2015	Website
1.15	Resident	Make a permit and notice required for all tree removal over x inches or x feet high, but make a free assessment for trees that owner are not sure need to be removed for health reasons.	Tree Retention and Canopy	10/3/2015	Website
1.16	Resident	Create a Heritage Tree code that requires mitigation that requires multiple and large replacement trees.	Tree Retention and Canopy	10/3/2015	Website
1.17	Resident	Details: Tree Retention - home loan program Add trees to the home repair assistance loan program. Require tree maintenance as part of the other loans. Add new trees additions up the City of Bellevue tree canopy goal. Provide grants for street trees	Tree Retention and Canopy	10/3/2015	Website
1.18	Resident	Require Utilities to get proper permits, provide notice, and use approved tree maintenance methods for trimming trees. That enhance not diminish the health of the tree.	Tree Retention and Canopy	10/3/2015	Website

Page 1 of 8

1.38	Resident	Require a permit for pruning root pruning, permanently attaching items, and chemical applications for all street trees and heritage trees.	Tree Retention and Canopy	10/6/2015	Website
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Page 2 of 8

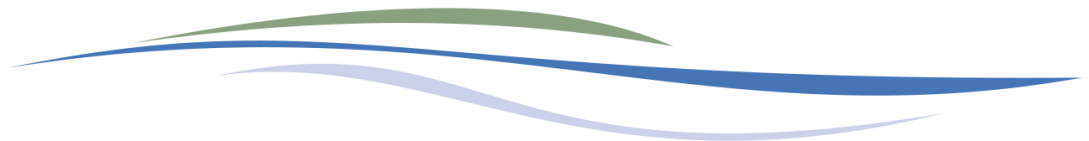
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5. Public Open Houses

- City Hall (5/17/2016)
- Lewis Creek Visitors Center (5/18/2016)
- Northwest Arts Center (5/19/2016)

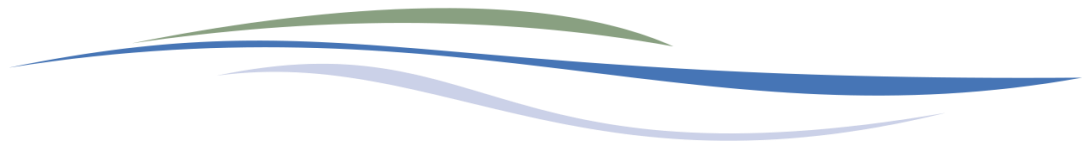


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6. Coordination with Other Initiatives

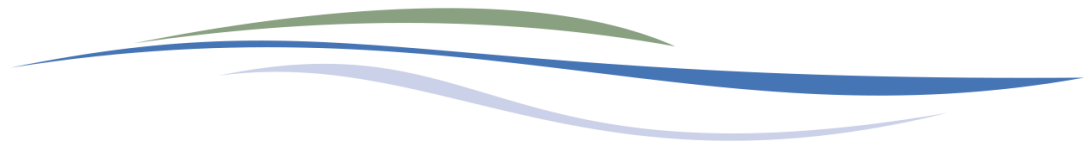
- Downtown Livability
- Eastgate Corridor Study
 - Evaluating appropriate impervious surface/hard surface limits for three new districts
- Wilburton-Grand Connection Initiative
 - Ensuring amendments are consistent with the City's goals for commercial development/redevelopment



7. Low Impact Development (LID)

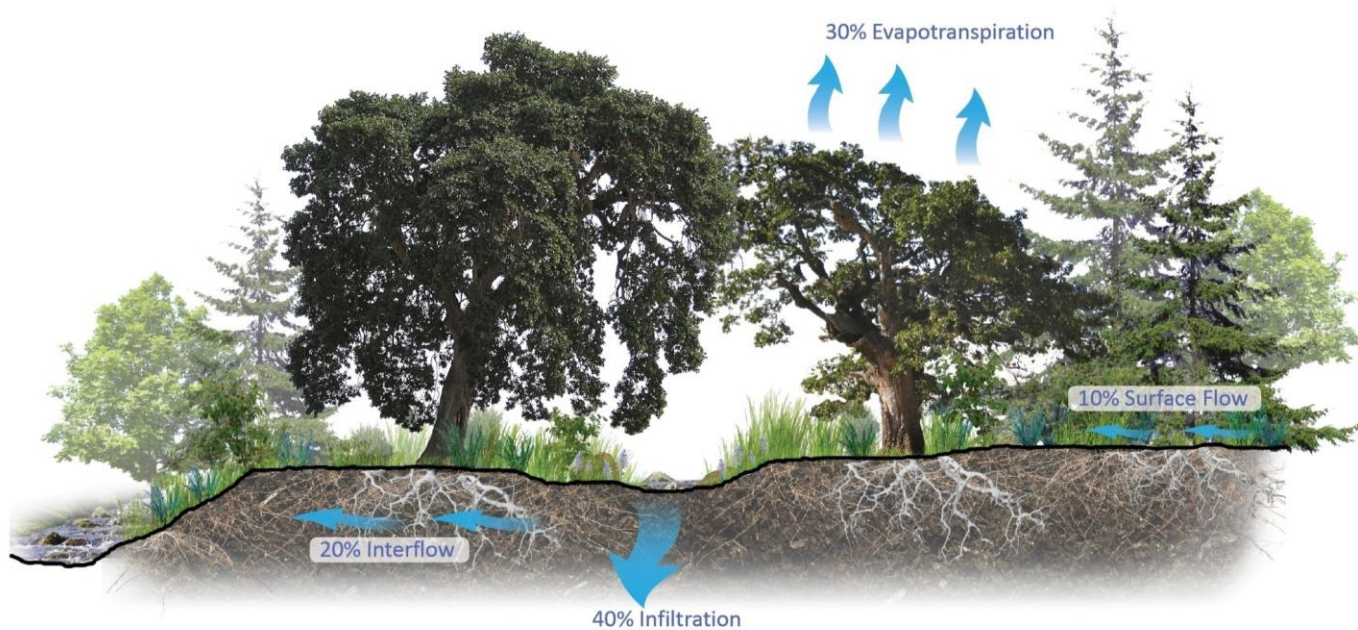
“Low-impact development (LID) is a stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes (infiltration, filtration, storage, evaporation, and transpiration) by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.”

*Source: Department of Ecology's Phase II
NPDES Municipal Stormwater Permit*

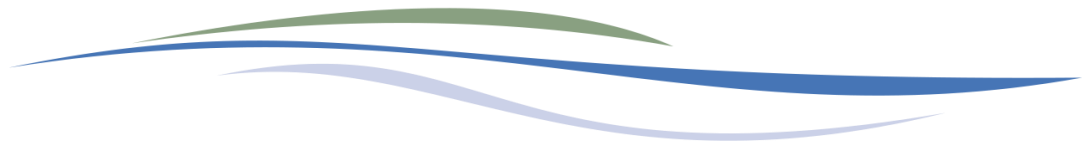


7. Low Impact Development (LID)

Pre-Development Hydrologic Conditions

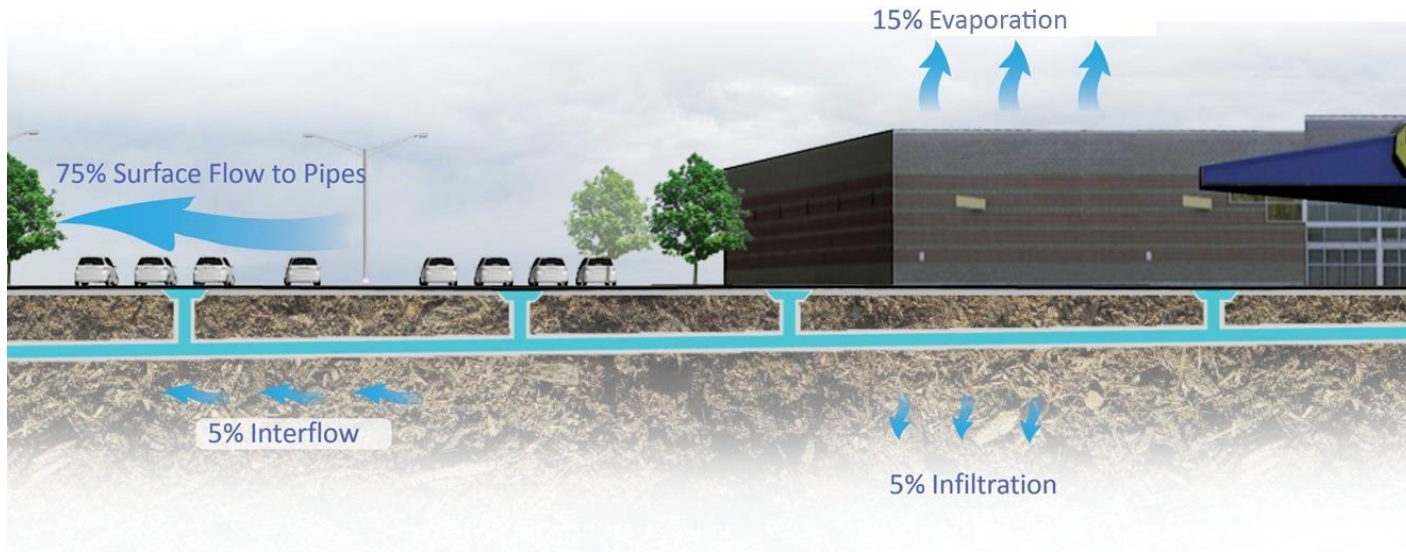


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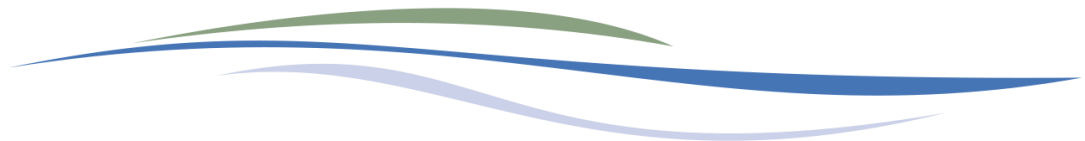


7. Low Impact Development (LID)

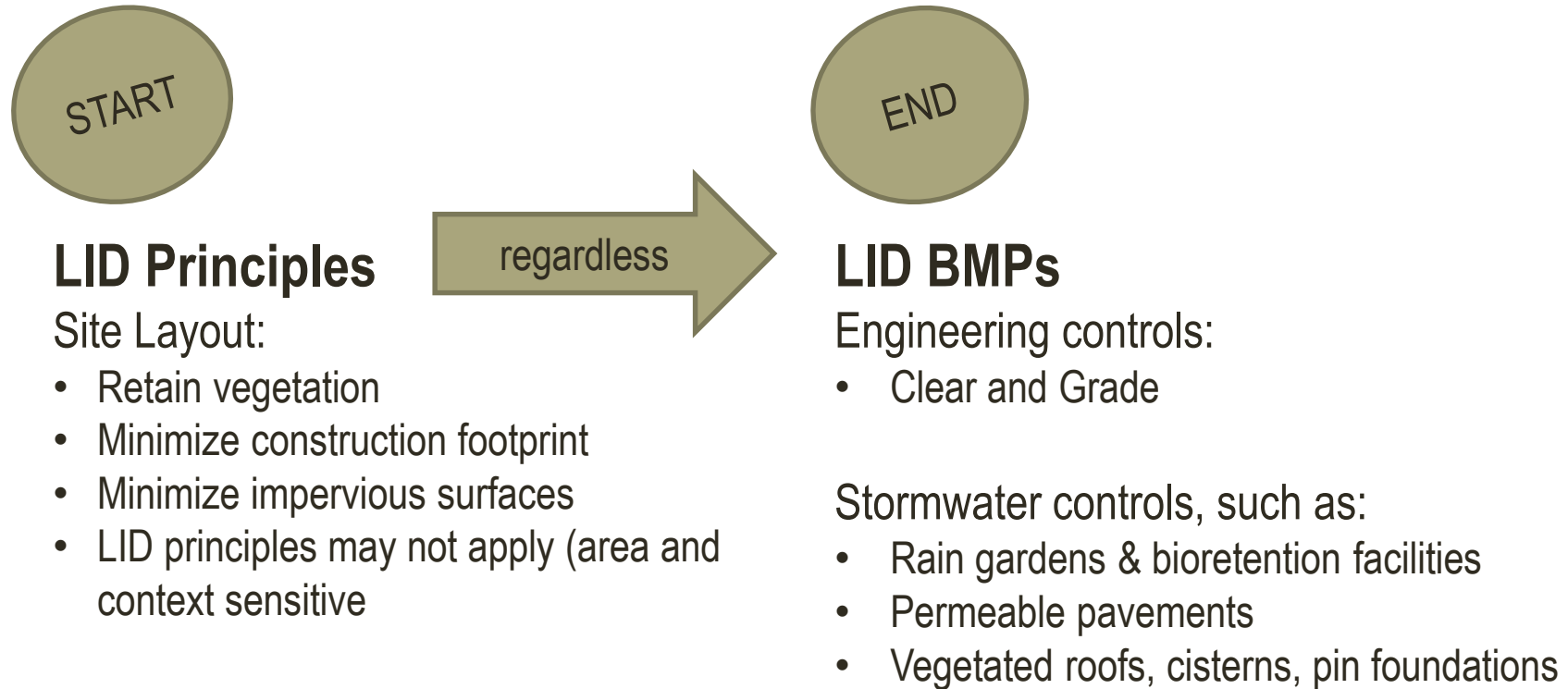
Pre-Development Hydrologic Conditions



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7. Low Impact Development (LID)



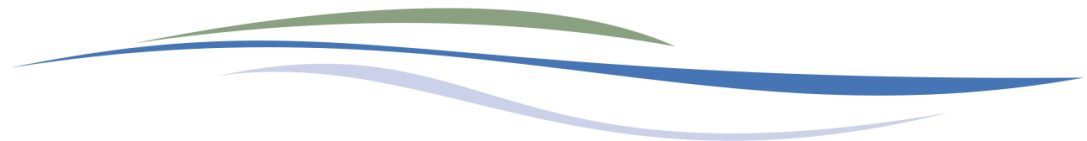
Aggressive use of LID techniques along with best conventional engineering techniques such as detention vaults and ponds to manage high flows

7. Low Impact Development (LID)

What the NPDES Permit Says:

Mimic pre-disturbance hydrologic functions with:

- **Land Use Management Practices: LID principles of reducing vegetation loss, reducing impervious surface coverage, and reducing stormwater runoff (Principles)**
- Engineering Practices: LID best management practices (BMPs) (engineered facilities) required where feasible – *meaning we will still see conventional facilities such as ponds and vaults along with LID practices*



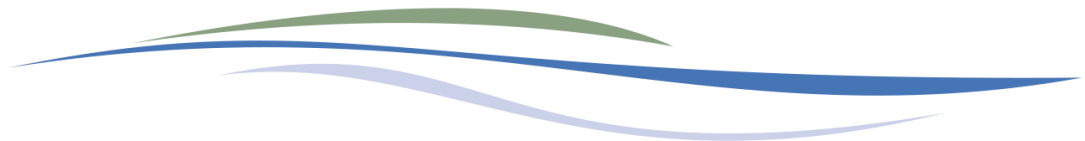
8. Proposals

LAND USE CODE

- Evaluate use of LID early in the site design process
- Reduce impervious surface coverage
- Preserve and enhance tree canopy
- Improve options for clustering development

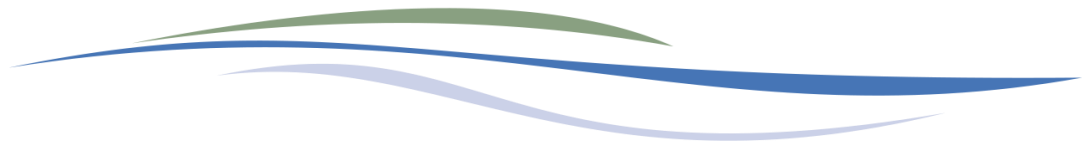
TRANSPORTATION DESIGN CODE AND STANDARDS

- Reduce impervious surfaces in rights-of-way
- Enhance tree canopy in transportation facilities



8. Proposals: Impervious Surfaces

- New standard is proposed for hard surface that supplements the existing impervious surface standard
- The impervious surface standards are proposed to be reduced to be aligned for consistency with the development that has occurred within each zone
- The proposal will allow same coverage (using impervious and permeable surfaces) that has been planned under the Comprehensive Plan and the neighborhood plans

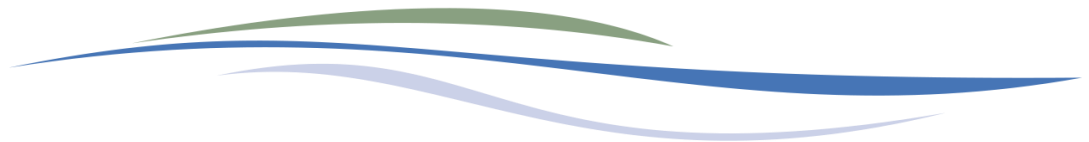


8. Proposals: Impervious Surfaces

Establish a hard surface standard

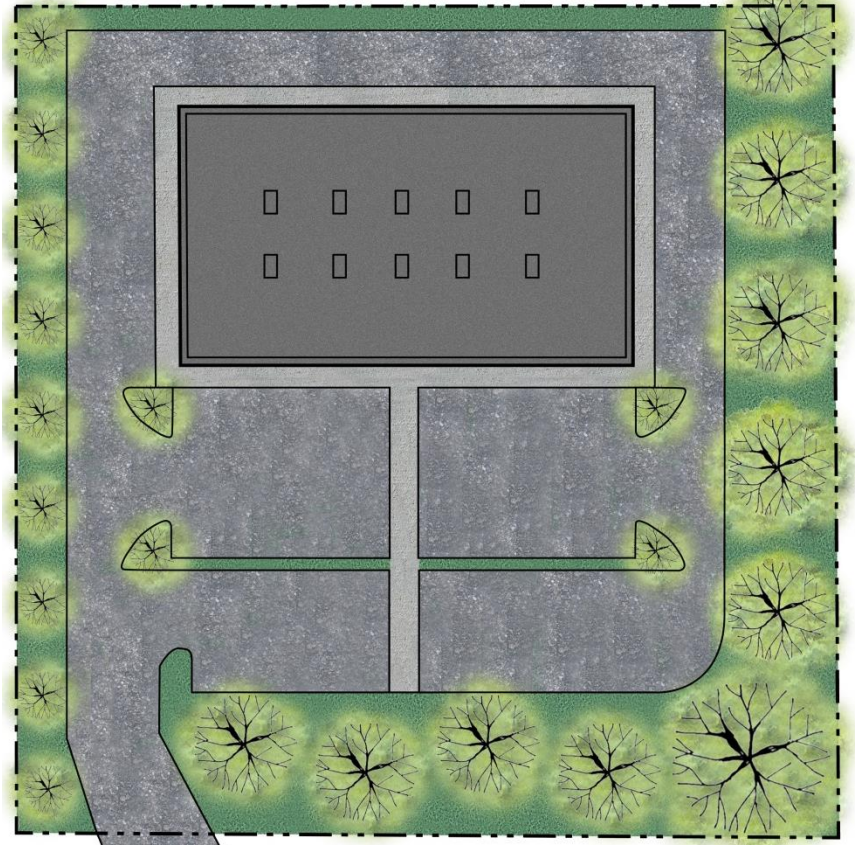
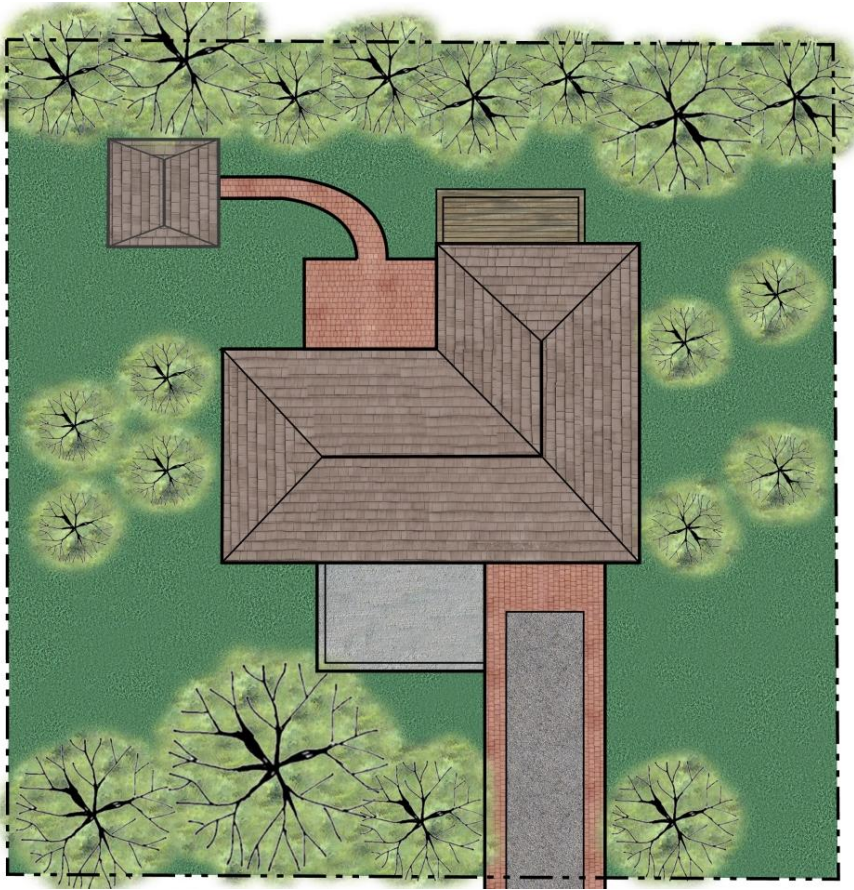
What are hard surfaces?

“An impervious surface, a permeable pavement, or a vegetated roof.”



8. Proposals: Impervious Surfaces

Establish a hard surface standard

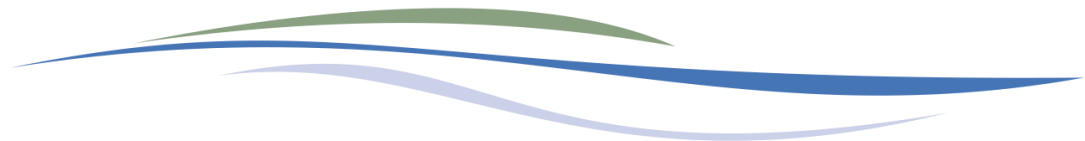


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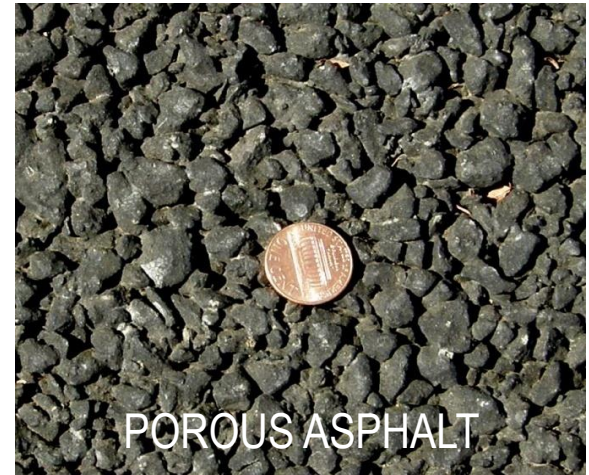
8. Proposals: Impervious Surfaces

LAND USE CLASSIFICATION	RESIDENTIAL			
	R-1	R-1.8	R-2.5	R-3.5
Maximum Lot Coverage by Structures (percent)	35	35	35	35
Maximum Impervious Surface (percent) (35) (37) (39) <u>(48)</u>	50 <u>40</u> (36)	50 <u>40</u> (36)	50 <u>40</u> (36)	50 <u>40</u> (36)
<u>Maximum Hard Surface Coverage (percent) (37) (39) (47) (48)</u>	<u>50</u>	<u>50</u>	<u>50</u>	<u>50</u>



8. Proposals: Impervious Surfaces

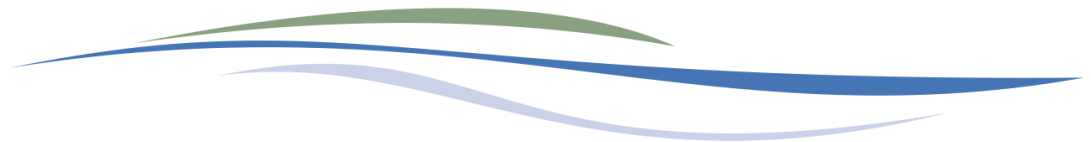
- (47) See LUC 20.20.425 for exceptions and performance standards relating to hard surfaces.
- (48) Where the application of permeable pavement has been determined to be infeasible using the infeasibility criteria in the 2014 Department of Ecology Stormwater Management Manual for Western Washington, now or as hereafter amended, the maximum impervious surface coverage may be exceeded, up to the maximum hard surface coverage allotment.



8. Proposals: Impervious Surfaces

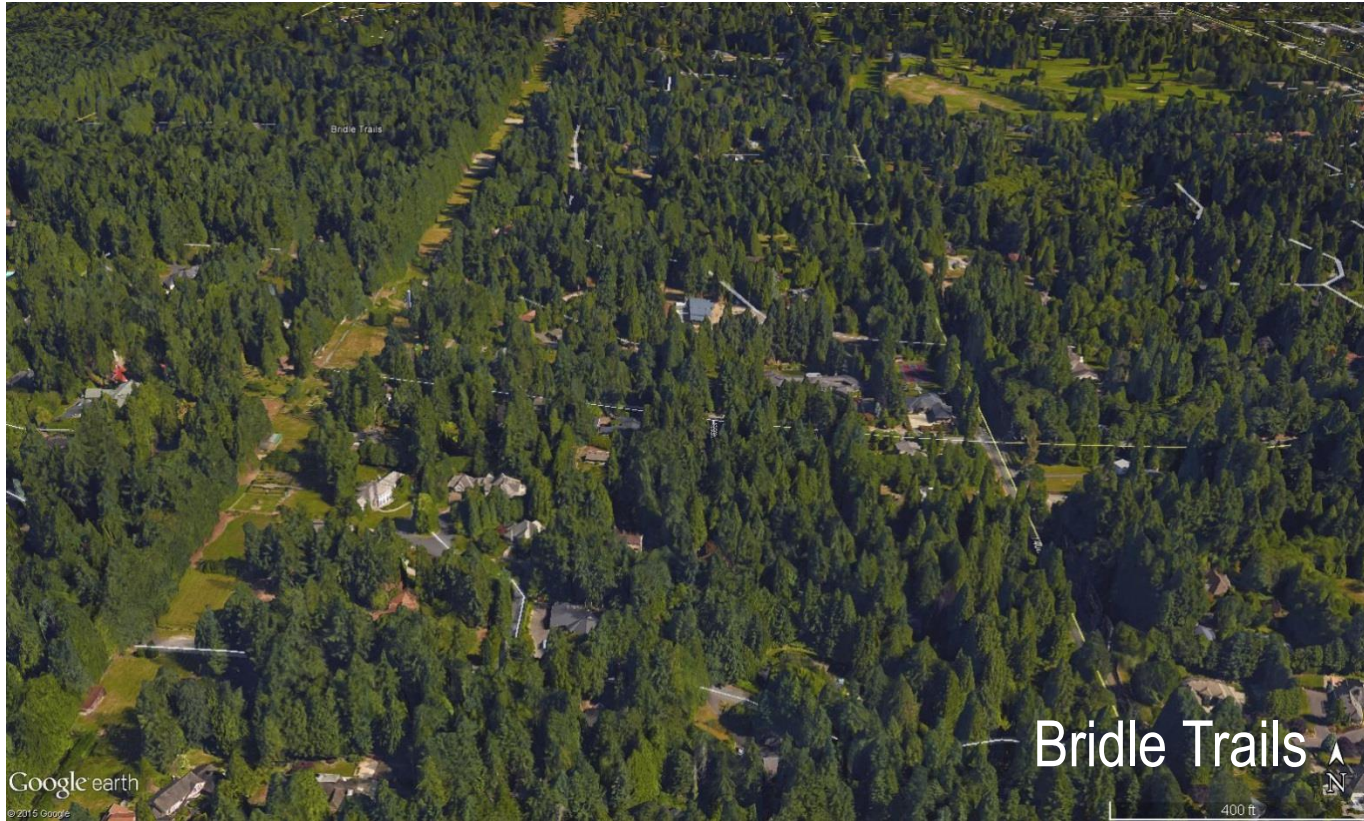
Transportation Code proposed changes include amendments that explicitly allow and encourage the following:

- Permeable surfaces for sidewalks
- Bioretention within landscape areas

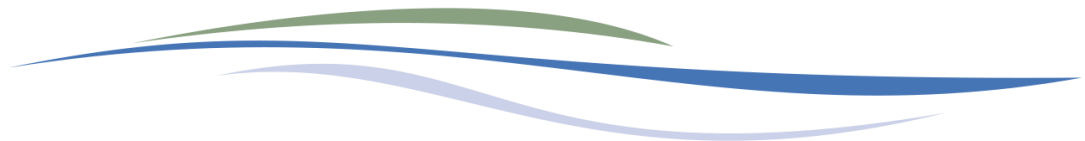


8. Proposals: Tree Retention

Tree Retention for New and Redevelopment Projects



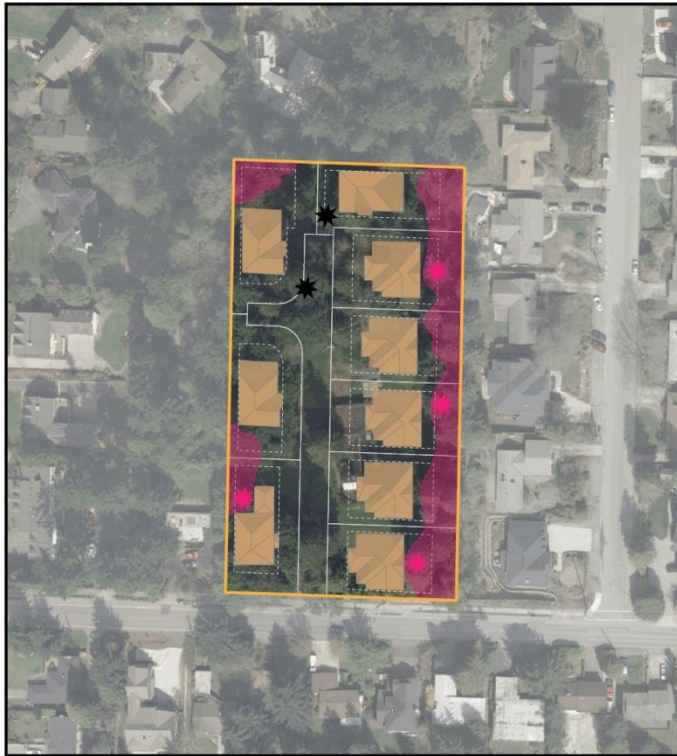
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8. Proposals: Tree Retention

Tree Retention within New and Redevelopment Projects

SITE PLAN CONSIDERATIONS FOR TREE RETENTION



SITE STATISTICS
TOTAL - 64 TREES (6 LANDMARK)
TOTAL DBH INCHES - 672"
30% RETENTION - 202"

RETENTION PLAN
★ RETAIN 4 LANDMARK TREES - 92"
★ REMOVE 2 LANDMARK TREES DUE TO CONFLICTS WITH ACCESS/UTILITIES
★ RETAIN 14 TREES THAT FORM A CONTINUOUS CANOPY AND ARE IN THE REAR YARD - 110"



Development Services
Handout L-XX

Purpose
The purpose of this handout is to clarify the definition of "landmark tree" pursuant to Bellevue Land Use Code (LUC) Chapter 20.20.000, Tree Retention and Replacement for the purpose of determining thresholds for "rare, uncommon, unique or exceptional" trees on sites undergoing development, in order to establish appropriate tree protection measures.

Background
Bellevue LUC Chapter 20.20.000, Tree Retention and Replacement, provides means for protecting trees in Bellevue. Under this chapter, landmark trees are given priority for retention. Landmark trees are defined in Bellevue LUC 20.20.50 as:

"Certain significant trees are considered landmark trees based on their size, species, condition, cultural/historic importance or age. The Director shall specify thresholds for trees to be considered for landmark status."

This handout provides clarification for determining trees that should be considered for landmark status as well as the standards and procedures for marking this determination.

Size Thresholds

Trees with a diameter at breast height (dbh), defined in this handout, that is equal to or greater than the threshold diameters listed in Table 1 are considered landmark unless they fail to meet the risk criteria discussed in the following section. For all species not listed in Table 1, the threshold diameter is 30" or 65% of the largest documented diameter for a tree of that species in Washington, whichever is less, as noted in Champion Trees of Washington State by Robert Van Pelt.

Measurement of Tree Diameter

Diameter at breast height (dbh), which means the diameter of a tree trunk measured at 4.5 feet above average grade, is used in determining the diameter of existing trees.

Landmark Trees

May 2016

Where a tree has a branch(es) or swelling that interferes with measurement at 4.5 feet above average grade or where a tree tapers below this point, the diameter is measured at the most narrow point below 4.5 feet. For trees located on a slope, the 4.5 feet is measured from the village of the highest and lowest ground points or, on very steep slopes where this is not possible, the lowest practical point on the uphill side. Where a tree splits into several trunks close to ground level, the dbh for the tree is the square root of the sum of the dbh for each individual stem squared.

Example with 3 stems: $dbh = \sqrt{(stem1)^2 + (stem2)^2 + (stem3)^2}$

Risk Assessment

Trees that meet the size threshold discussed above shall be considered landmark trees unless DSD finds that the tree or trees should be removed based on a risk assessment produced by a qualified professional. In making this determination, a qualified professional will consider crown size, structure, disease, past maintenance practice, potential damage to existing or future targets, risk mitigation options, and, when development is proposed, the likelihood of survival after construction.

To undertake tree risk assessment as part of a development application, a qualified professional shall have a minimum of 3 years' experience in tree evaluation and shall have worked directly with the protection of trees during construction, as well as having one of the following credentials:

- Society of American Foresters (SAF) Certified Forester
- International Society of Arborists (ISA) Certified Arborist with Tree Risk Assessor Qualification

Sources

Champion Trees of Washington State, 1996, by Robert Van Pelt.

Bellevue Trees to be Retained

Threshold Diameter
24 in
8 in
30 in
12 in
8 in
30 in
8 in
24 in
8 in
30 in
8 in
8 in
8 in
8 in
8 in
24 in
8 in
8 in
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23 in
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24 in
16 in
9 in
16 in
30 in
30 in
30 in
20 in
16 in
12 in
12 in
30 in
25 in
30 in
24 in
22 in
30 in
30 in

Pin OAK - *Quercus palustris*
Red OAK - *Quercus rubra*

8. Proposals: Tree Retention

20.20.900 Tree retention and replacement.

.....

- D. Retention of Significant Trees for Subdivisions, Short Subdivisions, Planned Unit Development, Change in Lot Coverage, or Change in the Area Devoted to Parking and Circulation, Excluding Areas Located in the R-1 Land Use District in the Bridle Trails Subarea and for New or Expanding Single-Family Structures.

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- 2. Site Interior.
 - a. In areas of the site other than the required perimeter landscaping area, the applicant must retain at least 15 percent of the diameter inches of the significant trees existing in this area; provided, that alder and cottonwood trees' diameter inches shall be discounted by a factor of 0.5. In the event of a conflict between this section at and LUC 20.25H "Critical Areas Overlay, section 20.25H shall prevail. In applying the requirement for retention of significant trees, the Director shall ~~consider~~ require the preservation of the following types of significant trees in the following order of a priority:



8. Proposals: Tree Retention

20.20.900 Tree retention and replacement (*continued*).

- i. Landmark trees as defined in LUC 20.50;
 - ii. ~~Healthy~~ Significant trees over 60 feet in height;
 - iii. Significant trees which form a continuous canopy;
 - iv. Significant trees located within the required rear yard, and the area between the rear line of the rear yard and 15 feet from the nearest building envelope; and
 - v. Significant trees which ~~contribute to the character of the environment, and~~ do not constitute a safety hazard.
 - ~~vi. Significant trees which provide winter wind protection or summer shade;~~
 - ~~vii. Groups of significant trees which create a distinctive skyline feature; and~~
 - ~~viii. Significant trees in areas of steep slopes or adjacent to watercourses or wetlands.~~
- b. The Director may approve retention of trees which do not meet the definition of significant trees as a contribution toward the sum of the diameter inches required under subsection D.2.a of this section if a group of trees and its associated undergrowth can be preserved.

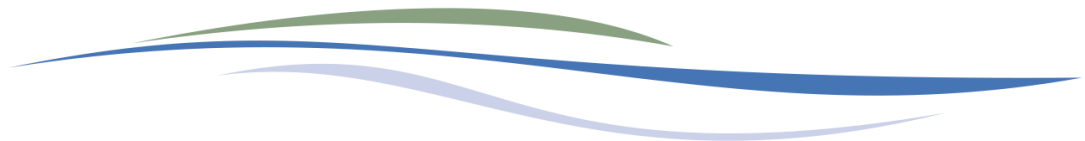


8. Proposals: Tree Retention

20.20.900 Tree retention and replacement (*continued*).

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5. The applicant shall utilize tree protection techniques approved by the Director during land alteration and construction in order to provide for the continual healthy life of retained significant trees. The director may require assurance devices pursuant to 20.40.490 to ensure the continual healthy life of retained significant trees for a period of up to five years.
6. Any property where significant trees are retained to meet the requirements of this chapter shall include notice of the retained trees on the recorded survey, and shall include a reference to this section to ensure their continued retention.



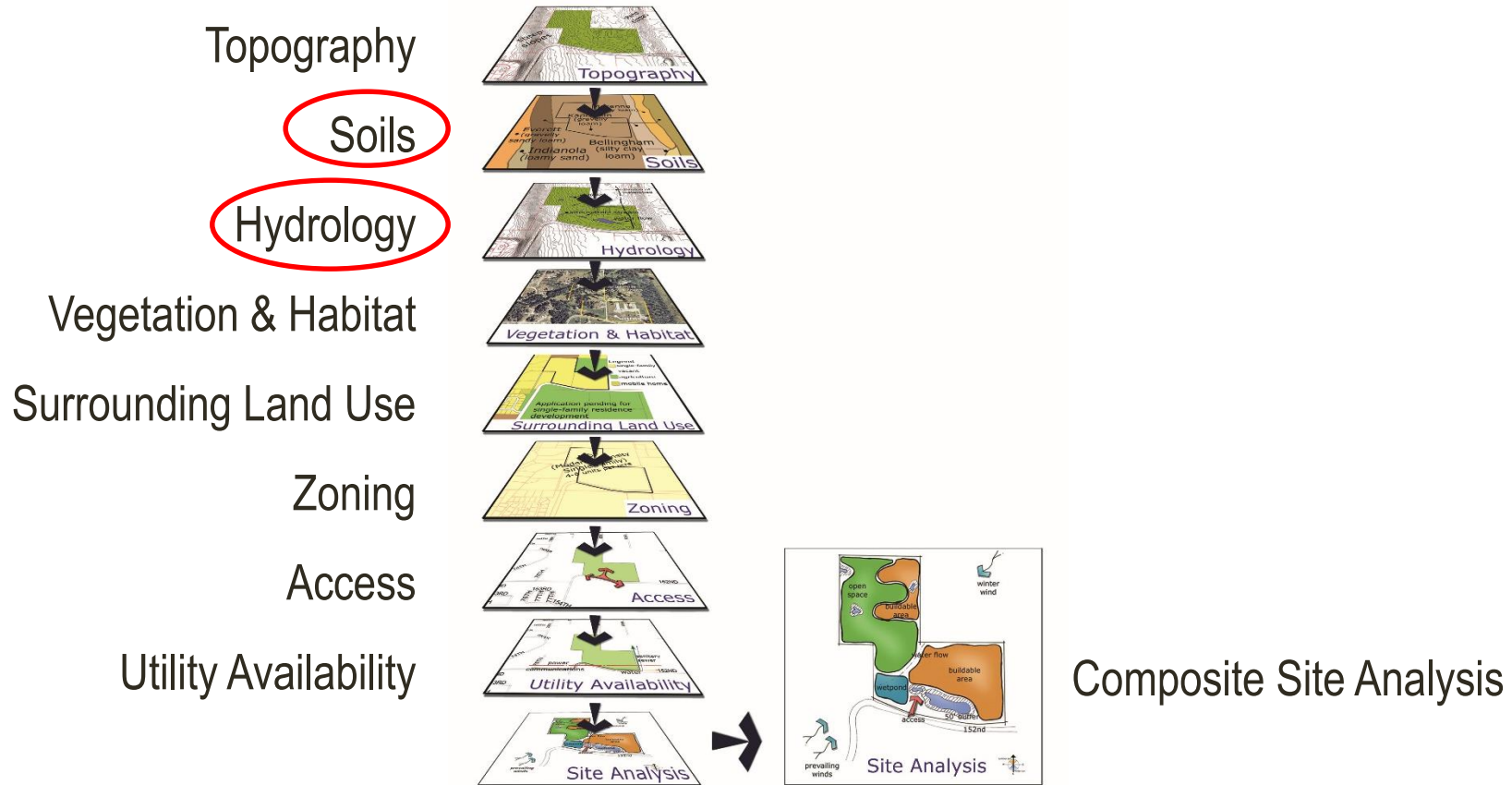
8. Proposals: Clustering

Clustering/PUD Code Provisions

- Management of on-site soils and the minimization of impervious surface coverage will be required for PUD approval
- Allowing zero lot line as long as the combined width of the side yard setbacks met minimum requirements.



8. Proposals: Site Design



8. Proposals: Site Design



Submittal Requirements

1/1/2014-2017

LARGE COMMERCIAL and MULTIFAMILY BUILDING PERMITS

- **Major Project:** New commercial or multifamily building or addition, 4,000 square feet or more, which does not require SEPA review or SEPA review has been done under a prior land use approval. Includes demolition work when appropriate. (BB)
- **Medium Project:** New commercial or multifamily building, addition or pool/spa, over 1,000 and less than 4,000 gross square feet. Includes clearing & grading, Land Use Exemption and/or demolition work when appropriate. (BM)
- **Shoring:** Excavation and shoring of property adjacent to the City of Bellevue right of way. (BV)
- **Detention Vault:** Stormwater detention structure. (BH)

To submit your application online use www.mybuildingpermit.com.

If you are applying in person at City Hall, submit the number of copies specified below for your application type.

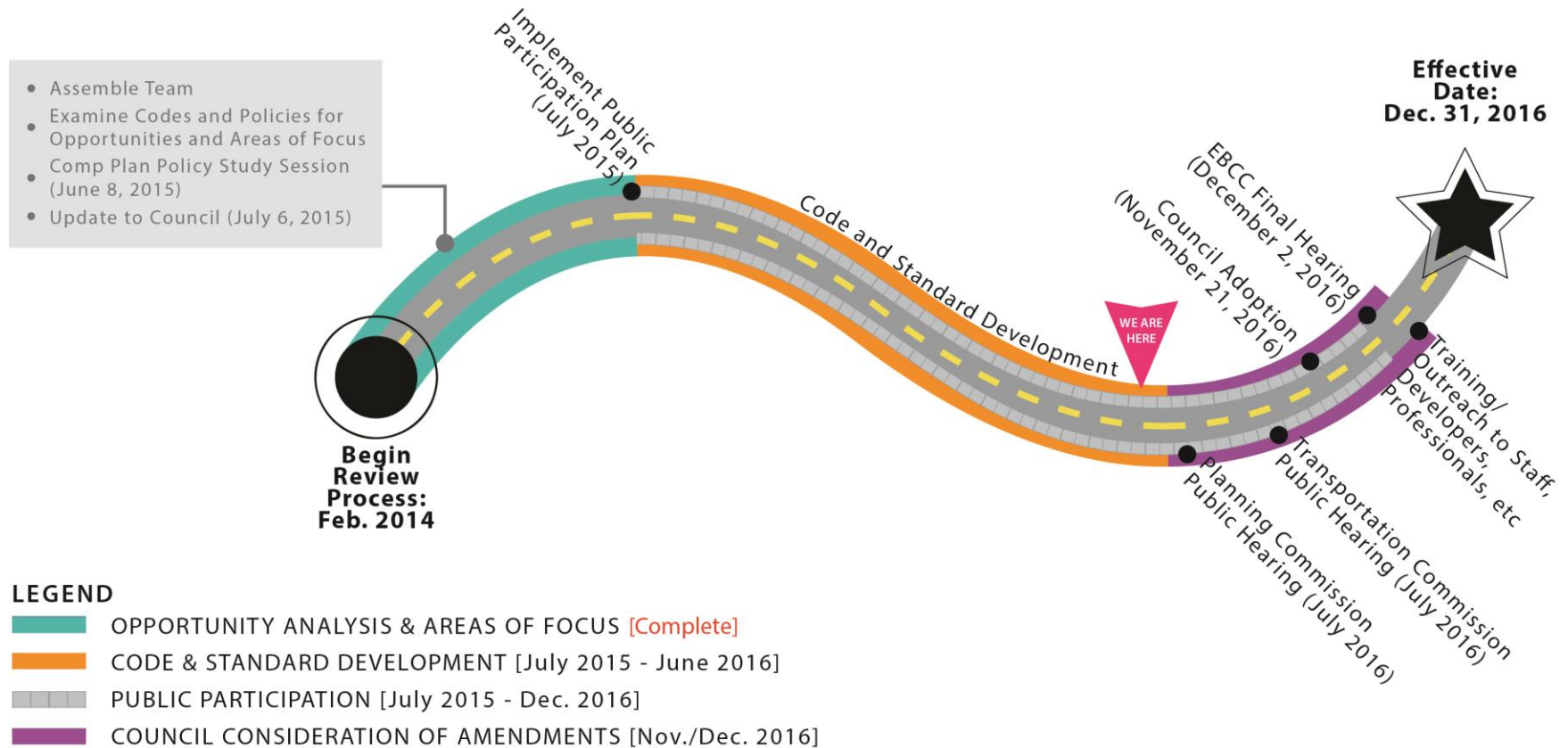
Planner: _____ <input type="checkbox"/> Include clearing & grading work in this permit (Over 1,000 square feet of clearing; over 50 cubic yards of grading; over 2,000 square feet of new, replaced, or new plus replaced impervious surface; work in a Critical Area; or foundation removal) <input type="checkbox"/> Land Use Exemption	Type of Critical Area: <input type="checkbox"/> Geologic Hazard <input type="checkbox"/> Wetlands <input type="checkbox"/> Streams <input type="checkbox"/> Flood Hazard <input type="checkbox"/> Habitat Associated with Species of Local Importance <input type="checkbox"/> Critical Areas offsite within 100 feet <input type="checkbox"/> Shoreline	Check below if applicable: <input type="checkbox"/> Substantial Development <input type="checkbox"/> Shoreline Exemption with SEPA <input type="checkbox"/> Shoreline Exemption without SEPA
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Initial for waiver by City of Bellevue Planner	Major Project	Medium Project	Shoring	Detention Vault
This Chart	1	1	1	1
Building Permit Application	1	1	1	1
"Bill To" Form	1	1	1	
Preapplication Conference Letter	If a conference was held, submit 1 copy.			
Value of Improvements				1
Issaquah or Renton School District Impact Fee Notification Form	1 (multifamily projects only)			
Site Plan A			6	6
Site Plan B	8	8		
Shoring Plan and Details			6	
Geotech Shoring Design Calc			2	
Architectural Plan ^A	4	4		
Geotechnical Report	2	2	2	1
Soils Report ^H				
Boundary/Topographic Survey	7	7		
King Co. Health Dept. Approval	Footnote B			
IBC Pedestrian Protection Plan	3	3		3
Tree Protection and Preservation Plan ^I				
Structural Plan ^C	2	2		4
Structural Calculations	1	1	2	1
Civil Plan ^D	5	5		
Final Civil Detention Vault Detail Sheet				3
Final Landscape Plan	5	5		

Initial for waiver by City of Bellevue Planner

This Chart	
Building Permit Application	
"Bill To" Form	
Preapplication Conference Letter	
Value of Improvements	
Issaquah or Renton School District Impact Fee Notification Form	
Site Plan A	
Site Plan B	
Shoring Plan and Details	
Geotech Shoring Design Calc	
Architectural Plan ^A	
Geotechnical Report	
Soils Report ^H	
Boundary/Topographic Survey	
King Co. Health Dept. Approval	
IBC Pedestrian Protection Plan	
Tree Protection and Preservation Plan ^I	
Structural Plan ^C	
Structural Calculations	
Civil Plan ^D	
Final Civil Detention Vault Detail Sheet	
Final Landscape Plan	

9. Adoption Phase



Low Impact Development
Principles Project

9. Adoption Phase

Meetings & Hearings

May 25th, 4:30 pm	Planning Commission (Study Session)
June 7th, 6:30 pm	East Bellevue Community Council (EBCC) (Status Update)
June 9th, 6:30 pm	Transportation Commission (Study Session)
June 22nd, 4:30 pm	Planning Commission (Study Session)
July 13th, 6:30 pm	Planning Commission (Public Hearing)
July 14th, 6:30 pm	Transportation Commission (Public Hearing)
August 2nd, 6:30 pm	EBCC (Courtesy Hearing)



9. Adoption Phase

Meetings & Hearings

September 12th

City Council (Study Session)

October 10th

City Council (Study Session)

November 14th

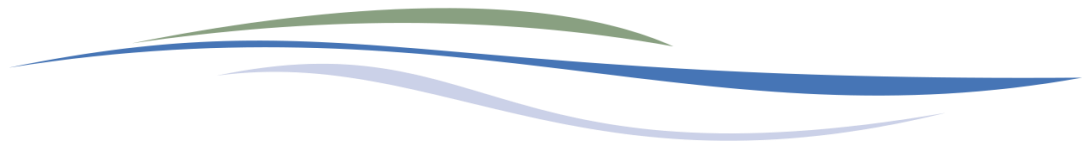
City Council (Study Session)

November 21st

City Council (Adoption)

December 8th

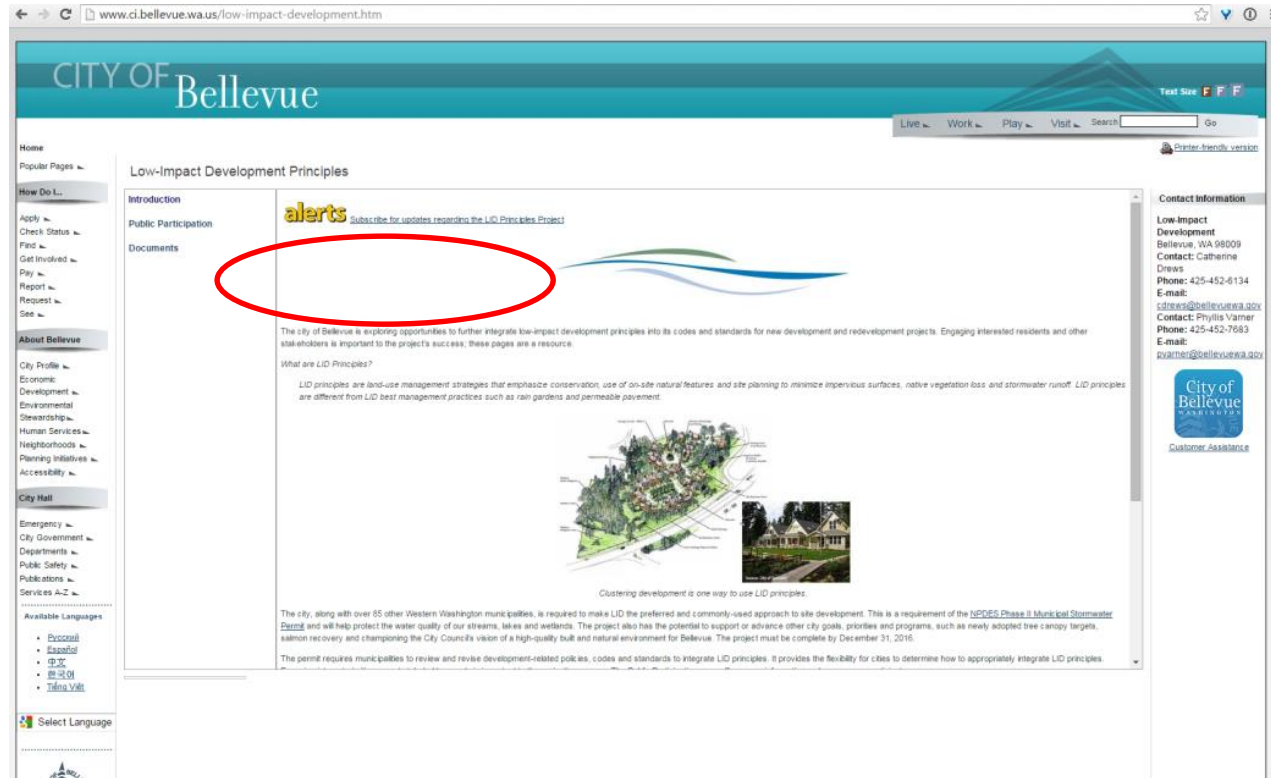
EBCC (Hearing)



9. Adoption Phase

LID Principles Project website:

<https://www.bellevuewa.gov/low-impact-development.htm>



Low Impact Development Principles Project